APPENDIX A

EXPLANATION OF SIGNIFICANT DIFFERENCES

HIGGINS DISPOSAL

Site Name and Location
Higgins Disposal
Town of Kingston, Franklin Township
Somerset County, New Jersey

INTRODUCTION

The United States Environmental Protection Agency (EPA) presents this Explanation of Significant Differences (ESD) to explain the modification made to the remedy selected in the September 30, 1997 Record of Decision (ROD) for the Higgins Disposal Superfund Site. This modification relates to that portion of the remedy which addresses the treatment of contaminated groundwater and is the result of new information obtained and developed subsequent to the 1997 ROD.

The remedy selected in the 1997 ROD called for contaminated groundwater to be extracted and conveyed via a pipeline to the existing treatment system at the nearby Higgins Farm Superfund Site for remediation to federal and state maximum contaminant levels (MCLs) and the promulgated New Jersey Groundwater Quality Standards Criteria (NJGQSC), the discharge of treated groundwater to surface water, and the implementation of a groundwater monitoring program. In addition, the ROD also required that the ten residences on Laurel Avenue and the Higgins family residence on the site be connected to a potable water supply line. Finally, the ROD stated that five-year reviews will be periodically performed to ensure that the remedy is protective of human health and the environment.

This remedy was based on information presented in the final August 1996 Remedial Investigation and Feasibility Study (RI/FS). However, following the completion of the on-site landfill removal activities and the extension of a potable water supply line to the ten residences of Laurel Avenue and the Higgins residence, EPA and one of the potentially responsible parties (PRPs) agreed to an additional investigation of the site prior to the start of design activities for the groundwater remedy. The purpose of this pre-design investigation (PDI) was to assess the impact of the removal activities on the site groundwater, verify the assumptions made in the RI/FS, and provide a better understanding of the groundwater conditions at the site. In February 2001, the

PRP submitted the PDI report to EPA which generated new information about the site that was not available during the preparation of the ROD. This new information has resulted in a decision to modify the groundwater remedy selected in the 1997 ROD.

EPA is issuing this ESD pursuant to Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended 42 U.S.C. §9617(c), and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 C.F.R. §300.435(c)(2)(i). The ESD and documents which form the basis for the decision to change the response action will be incorporated into the Administrative Record file for the site in accordance with Section 300.825(a)(2) of the NCP. The entire Administrative Record for the site is available for public review at the following locations:

Mary Jacobs Memorial Library
64 Washington Street
Rocky Hill, NJ 08553
(609) 924-7073

Hours: 9:30 a.m. - 8:30 p.m. (Monday thru Thursday)
9:30 a.m. - 5:30 p.m. (Friday)
9:30 a.m. - 12:30 p.m. (Saturday)

Franklin Township Public Library
485 De Mott Lane
Somerset, NJ 08873
(732) 873-8700

Hours: 10:00 a.m. - 9:00 p.m. (Monday - Thrusday)
10:00 a.m. - 5:00 p.m. (Friday and Saturday)
1:00 p.m. - 4:00 p.m. (Sunday)

and

U.S. Environmental Protection Agency
290 Broadway - 18th floor
New York, NY 10007
(212) 637-4308

Hours: 9:00 a.m - 4:30 p.m. (Monday - Friday)

This change to the selected remedy is not considered by EPA or the New Jersey Department of Environmental Protection (NJDEP) to be a fundamental modification of the remedy selected in the ROD. The remedy modification will maintain the protectiveness of the

groundwater action with respect to human health and the environment, and complies with federal and state requirements that were identified in the ROD.

SITE BACKGROUND

Location and General Description

The site, which consists of 37.6-acres, is located in a rural area on Laurel Avenue (Kingston-Rocky Hill Road) in Franklin Township, Somerset County, New Jersey. It is bounded by residential properties to the south, a commercial property (Trap Rock Industries' Quarry) to the north, and undeveloped farmland to the east-southeast. The Higgins Farm Superfund Site is located about 1.5 miles to the northeast. Within a three-mile radius of the site, approximately 10,000 people rely on groundwater as a source of drinking water.

A freshwater wetland is located 300 feet from the site as well as two on-site ponds that discharge into Dirty Brook, a tributary of the Delaware/Raritan Canal. Dirty Brook, located along the northern and southern property boundaries, is not used for irrigation or drinking water. The Delaware/Raritan Canal, located approximately three miles downstream from the site, is used for fishing, boating, and swimming. Both the Millstone River and Delaware/Raritan Canal, located approximately 1,500 feet west-southwest of the site, flow north and eventually discharge into the Raritan Bay.

Site History

From the 1950's through 1985, the Higgins Disposal Services, Inc. (HDS) operated a residential, commercial, industrial and construction waste disposal facility that included a waste transfer station and compactor, an underground storage tank, an area for container storage, and a non-permitted landfill on the eastern side of the property. The owner's family currently maintains a residence on the site, as well as an equestrian school (Hasty Acres Riding Club) and a truck repair shop.

In early 1982, NJDEP discovered that HDS was operating an unregistered waste transfer station and an active, non-permitted, landfill on the property. Following an inspection of the property in September 1982, NJDEP issued an Administrative Order to HDS in October 1982. The Order required HDS to cease all operations of the landfill and remove the solid waste from the property.

In August 1985, the owner of several residences on Laurel Avenue (Trap Rock Industries) contacted the Franklin Township Health Department (FTHD) and NJDEP because of medicinal tasting tap water. Subsequently, FTHD and NJDEP sampling of the residential wells on Laurel Avenue revealed the presence of various volatile organic compounds (VOCs). In December 1985, NJDEP began an investigation to determine the source of the contamination. Based on this investigation, NJDEP identified HDS as one of the potential source areas. All residences on Laurel Avenue who did not have access to the public water supply line were notified by NJDEP or FTHD to use bottled water and/or install a whole-house point source filter system.

In September 1986, NJDEP instituted an Interim Well Restriction Area (i.e., the State restricted the installation of new wells for potable use) for the Laurel Avenue area while negotiations continued between Franklin Township and a water supply company to extend a waterline to the residences of Laurel Avenue. These negotiations continued unsuccessfully until approximately 1993.

The site was proposed for inclusion on the National Priorities List (NPL) of Superfund Sites on June 24, 1988. It was added to the NPL on August 30, 1990. Subsequently, EPA conducted a Removal Assessment at the site. This assessment was necessary to determine if any emergency response actions were warranted prior to beginning an investigation of the site.

Summary of Removal Actions

In October 1990, as part of the Removal Assessment, EPA's Environmental Response Team (ERT) collected shallow soil and pond sediment samples from selected areas across the site which were accessible to customers of the Hasty Acres Riding Club. The results of this sampling indicated that polychlorinated biphenyls (PCBs) in the range of 1.2 to 47 parts per million (ppm) were present in the surface soils of the Beginners' Riding Ring. This contamination is believed to be the result of the movement of PCB-contaminated soil from the indoor riding ring after a fire inside the indoor riding ring had caused a lighting ballast containing PCBs to fall on the ground.

From October through November 1992, EPA undertook a removal action which restricted access to the Beginners' Riding Ring during the excavation and disposal of 765 tons of PCB-contaminated soil. The contaminated soil was shipped to a Toxic Substances Control Act permitted landfill in Grandview, Idaho. No other accessible surface locations on the property were found to pose an immediate health concern.

During the course of the RI field work in March 1993, an additional removal action was initiated upon the discovery of buried waste in a field on the property, south of the landfill. Initially, only drums were discovered in this area based on a geophysical survey conducted as part of the RI field activities. However, test trenching activities uncovered laboratory glassware and plastic containers. These test trenches confirmed the presence of hazardous substances in containers and soil at several locations on the site which were primarily near the surface and in areas of an active portion of the Hasty Acres Riding Club. Because this contamination posed a significant threat of potential exposure to the riders and horses, the Agency for Toxic Substances and Disease Registry (ATSDR) recommended the immediate placement of warning signs and to restrict access in this area. As part of a second removal action, a security fence was erected on May 27, 1993.

Following the installation of warning signs and a fence, another geophysical survey was conducted using different instrumentation to search for non-metallic buried waste as well as other buried waste not discovered during the first metallic survey. This survey was completed in the summer of 1993. After an analysis of the results, EPA began excavating areas of known and suspected buried waste in April 1994. Some areas were found to be clean, while others contained a great deal of buried waste, corroded and leaking containers as well as glass bottles and vials, some empty and some containing material.

From April through October 1994, approximately 3,200 containers and 850 tons of contaminated soil (other than the soil from the Beginners' Riding Ring) were excavated and transported off-site for disposal at permitted disposal facilities. In addition, to ensure that the geophysical surveys had identified all areas used for burying waste, additional test trenching was initiated in November 1994. Nine test trenches were excavated to a depth of approximately eight feet below grade. No waste materials were discovered in any of these test trenches.

However, during the excavation of one additional test trench along the vegetated fence line on the eastern side of the site, more buried waste (a 55-gallon drum, two 5-gallon plastic lab jugs, a 40- milliliter (ml) vial, and a bag of resinous white material) was uncovered. This buried waste was consistent with the type of waste found in other burial areas on the site. As a result of this newly-discovered waste material, additional test trenches were excavated to delineate the extent of the buried waste. From November 1994 to May 1996, additional buried waste was excavated as part of EPA's removal activities. By June 1996,

a total of approximately 7,000 containers and 12,000 tons of contaminated soil were excavated and transported off-site for disposal at permitted disposal facilities.

Post-excavation sampling in the summer of 1996 revealed the presence of waste containers near the previously defined edge of the landfill. From September to November 1996, EPA excavated and disposed of approximately 50 laboratory containers and 908 tons of contaminated soils from the southern face of the landfill.

As a result of the excavation of laboratory containers and contaminated soils from the southern face of the landfill, a comprehensive investigation of the landfill area was initiated in the fall of 1996. As part of this investigation, twelve shallow test trenches were excavated near the perimeter of the landfill in January 1997. The results of the excavation indicated that the landfill contained buried containers, drums, and other waste materials.

On March 11, 1998, EPA and the Potentially Responsible Party (PRP) entered into an Administrative Order on Consent (AOC) for the removal of the landfill area at the site. Between August 1998 and June 1999, approximately 34,000 tons of soil, debris and non-native materials and 16,000 containers were excavated and shipped off-site to a permitted disposal facility. After completing the removal activities in June 1999, a small volume of radioactive and mixed wastes remained on-site in a secure area while off-site disposal arrangements were being finalized. The radioactive and mixed waste were removed for off-site disposal in December 1999 and June 2000, respectively.

Summary of Remedial Actions

EPA initiated a Remedial Investigation (RI) in October 1992. The purpose of the RI was to determine the nature and extent of the contamination in the surface and subsurface soils, sediments, surface water and groundwater at the site. The RI results indicated that the majority of the contaminant concentrations and frequency of detection were found to be relatively low throughout the site. However, the highest concentration of VOCs were observed in the groundwater near the landfill. Subsequent to the completion of the RI, the landfill was found to contain significant amounts of hazardous substances mixed with solid waste.

As part of the RI, a baseline risk assessment was conducted to estimate the risks associated with the current and future site conditions. Based on the results of the RI, the risk assessment

concluded that the exposure to contaminated groundwater posed a potential threat to residents who currently utilize groundwater as their potable water supply or residents who will utilize groundwater in the future. The exposure to soils, surface water, and sediments did not pose a significant risk. Following the completion of the RI, an FS was prepared which identified various alternatives for addressing the groundwater contamination at the site. A final RI/FS report was issued in August 1996.

Based on the results from the final RI/FS report, a ROD was signed on September 30, 1997 which selected a groundwater remedy for the site. The major components of the selected remedy included the waterline extension and connection to the residences of Laurel Avenue and the Higgins' residence, the installation of on-site extraction wells, the construction of a pipeline to convey contaminated groundwater to the Higgins Farm Site for treatment and discharge to a surface water body, and the implementation of a monitoring program to ensure groundwater would achieve the federal and state MCLs and the promulgated NJGQSC.

On May 19, 1998, EPA issued a Unilateral Administrative Order (UAO) to the PRP for the extension and connection of a water supply line to the ten residential properties on Laurel Avenue and the Higgins' residence on the site. However, after the UAO had been issued, two additional service connections were included in this remedial action, one for a newly-constructed home on Laurel Avenue, and one for a single resident property that required two separate water meters. The waterline extension and connection to the thirteen residences was completed in April 1999, and a final Laurel Avenue Waterline Extension Remedial Action Report was approved by EPA on September 16, 1999.

From October 1999 to September 2000, an approved pre-design investigation (PDI) to further delineate the extent of groundwater contamination, was conducted by the PRP. A final PDI Report was submitted in February 2001. Subsequently, the PRP prepared and submitted a focused Feasibility Study (FFS), dated June 2001, which re-evaluated several response actions for addressing the site groundwater contamination.

DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES

The difference between the remedy selected in the September 1997 ROD and the actions described in this ESD relate to the treatment and disposal of contaminated groundwater. The other components

of the selected remedy will remain the same.

The primary remedial objectives for the remedy selected in the September 1997 ROD were to capture and treat the groundwater contamination found at the site, and limit the future off-site migration of the contaminated groundwater.

Based on the FS, EPA selected Alternative 3B as the preferred remedial alternative for the groundwater remedy at the site. Alternative 3B includes the installation of on-site extraction wells, the construction of a pipeline for conveying extracted groundwater to the Higgins Farm waste water treatment plant (WWTP) for treatment, the discharge of treated groundwater to surface water, and the implementation of a monitoring program to ensure the effectiveness of the remedy.

As a result of the new information generated by the PDI, an FFS was prepared which re-evaluated two of the alternatives originally discussed in the FS. Alternative 3B (the ROD selected remedy) and Alternative 4B both meet the remedial objectives outlined for the site. Alternative 4B includes the installation of on-site extraction and reinjection wells, and the construction of a 10 gallons per minute (gpm) treatment plant. On-site reinjection of treated water had been rejected during the FS process. However, new data obtained from the PDI indicated that the overburden soils within the site were sufficiently deep (100 feet) and permeable for re-injection of treated water. This treated water could, therefore, be successfully reinjected into the overburden near the center of the site and be recaptured by the aquifer from which it originated. Furthermore, the PDI had also re-examined the installation of a pipeline to the Higgins Farm treatment plant (Alternative 3B) and determined that the pipeline route would present many more difficulties, which were not assessed during the FS, in obtaining permits, rights-of-way, and easements from off-site areas, including the crossing of Dirty Brook. In addition to the new information in the PDI, a natural attenuation study was conducted to determine whether groundwater conditions were suitable for biodegradation processes. The analytical results provided several lines of evidence that biodegradation for select VOCs may be occurring.

As part of the FFS, a comparative analysis was conducted of the remedial alternatives. The results of this analysis indicated that both Alternative 3B and Alternative 4B would provide compliance with the identified applicable or relevant and appropriate requirements (ARARs), achieve the overall protection of human health and the environment, and reduce the toxicity, mobility, and volume of the site-related contaminants. However, the analysis also indicated that the potential for off-site

discharge of contaminated groundwater from a pipeline failure associated with Alternative 3B could affect its long-term effectiveness compared to the on-site treatment of Alternative 4B. In addition, the implementation of Alternative 3B would provide administrative uncertainties because of the requirements necessary for installing a pipeline off-site, such as obtaining easements and land owner access agreements, compared to the on-site remedial activities for Alternative 4B. Finally, after the remedial design activities have been completed, Alternative 4B could be implemented within 6 months compared to 18 months for Alternative 3B.

For Alternative 4B, the capital costs are estimated to be $729,350. Annual operation and maintenance is estimated to be $390,000. The present worth cost is estimated to be $2,700,000.

For Alternative 3B, the capital costs are estimated to be $2,464,710. Annual operation and maintenance is estimated to be $338,000. The present worth cost estimated to be $4,300,000.

Based on an evaluation of the two alternatives, EPA recommends Alternative 4B, instead of Alternative 3B, as the preferred groundwater remedy for the site. Alternative 4B includes the installation of extraction wells, on-site treatment from a WWTP, and reinjection of treated water into the aquifer. The extracted water will be piped to an on-site WWTP which includes flocculation, clarification, filtration followed by two granular-activated carbon (GAC) vessels, and final pH adjustment. As part of this groundwater remedy, a Classification Exemption Area (CEA) would need to be implemented for the impacted groundwater at the site until the contaminant concentrations meet federal and state maximum contaminant levels (MCLs) and New Jersey Groundwater Quality Standards Criteria. Alternative 4B would require operation and maintenance which consists of performance monitoring of the system and groundwater to ensure achievement of remediation goals.

The preferred alternative (Alternative 4B) is expected to cost approximately $1,600,000 less and provide the same level of protectiveness in significantly less time than the preferred remedy in the September 1997 ROD (Alternative 3B). In addition, the on-site treatment plant is more feasible to implement, and more cost-effective than the extension of an off-site pipeline.

SUPPORT AGENCY COMMENTS

NJDEP concurs with EPA on this modified remedy.

AFFIRMATION OF STATUTORY DETERMINATIONS

EPA and NJDEP believe that the modified remedy remains protective with respect to human health and the environment, complies with federal and state requirements that were identified in the ROD and this ESD as applicable or relevant and appropriate to this remedial action, and is cost effective. In addition, the remedy continues to utilize permanent solutions and alternative treatment technologies to the maximum extent practicable for this site.

PUBLIC PARTICIPATION

In accordance with the NCP, a formal public comment period is not required when issuing an ESD. However, since the community had expressed an interest in the 1997 ROD preferred remedy, EPA will announce the availability of this ESD and provide a public availability session.

Copies of the FFS, ESD and any other supporting documentation are available in the Administrative Record for this site maintained at the Mary Jacobs Memorial Library, Franklin Township Public Library and the U.S.Environmental Protection Agency (as described on Page 2).

12/9/02
Date

Jane M. Kenny
Regional Administrator